

CLASS 358 FACSIMILE AND STATIC PRESENTATION PROCESSING

- 1.1 **STATIC PRESENTATION PROCESSING (E.G., PROCESSING DATA FOR PRINTER, ETC.)**
- 1.2 . Size, resolution, or scale control
- 1.3 . Plotter
- 1.4 . Plural marking means
- 1.5 . Position or velocity determined
- 1.6 . Specific to image source
- 1.7 . Flying dot (e.g., laser beam, etc.)
- 1.8 . Dot matrix array (e.g., printheads, etc.)
- 1.9 . Attribute control
- 2.1 . . Processing based on at least two different image attributes (e.g., character, graphic, photo, line, edge, gray-level, color)
- 2.99 . . Bi-level image reproduction (e.g., character or line reproduction)
- 3.01 . . Multi-level image reproduction (e.g., gray level reproduction)
- 3.02 . . . Print element property varied to represent gray level
- 3.03 . . . Error diffusion in gray level or halftone generation
- 3.04 Property of error weighting filter (e.g., adaptive, deterministic, random)
- 3.05 Adaptive error diffusion
- 3.06 . . . Halftoning (e.g., a pattern of print elements used to represent a gray level)
- 3.07 Rescreening (e.g., converting spatial resolution)
- 3.08 Descreening (e.g., inverse halftone conversion)
- 3.09 Print element property varied to effect halftone pattern
- 3.1 Density of print element (e.g., multi-level halftone)
- 3.11 Shape of print element
- 3.12 Size of print element
- 3.13 Dithering (e.g., spatial distribution of print elements by threshold matrix)
- 3.14 Adaptive dithering
- 3.15 Edge adaptive
- 3.16 Ordered dithering (e.g., deterministic or systematic)
- 3.17 Clustered pattern
- 3.18 Dispersed pattern
- 3.19 Stochastic or random dithering
- 3.2 Screen property or geometry (e.g., shape, period, symmetry, aspect ratio)

photography
2851

- 3.21 . . . Adaptive multi-level image reproduction
- 3.22 Variable threshold determined by image or
other condition (e.g., adaptive thresholding)
- 3.23 . . . Look-up table for image processing or print
attribute data (e.g., threshold value, print element
property)
- 3.24 . . Adaptive image reproduction
- 3.26 . . Distortion control in image reproduction (e.g.,
removing, reducing or preventing image artifacts)
- 3.27 . . Enhancement control in image reproduction
(e.g., smoothing or sharpening edges)
- 3.28 . . Embedding a hidden or unobtrusive code or
pattern in a reproduced image (e.g., a watermark)
- 3.29 . . Engraving or perforating material to form a
printing surface (e.g., printing plate, cylinder, or
stencil)
- 3.3 . . . Halftone pattern formed on printing surface
- 3.31 . . . Character or design formed on printing surface
(e.g., intaglio)
- 3.32 . . . Mechanical arrangement for forming a printing
surface
- 1.11 . Character or font
- 1.12 . Detail of medium positioning (e.g., movement to
or from presentation location of medium, etc.)
- 1.13 . Emulation or plural modes
- 1.14 . Data corruption, power interruption, or print
prevention
- 1.15 . Communication
- 1.16 . Memory
- 1.17 . . Page or frame memory
- 1.18 . Detail of image placement or content
- 500 **NATURAL COLOR FACSIMILE**
- 501 . Image reproduction
- 502 . . Ink-Jet
- 503 . . Thermal
- 504 . Measuring, testing, and calibrating
- 505 . Scanning
- 506 . . Transparency image scanning
- 507 . . Cathode-ray tube
- 508 . . Transceiver
- 509 . . Illumination
- 510 . . . Coherent light
- 511 . . With prism
- 512 . . With color filters
- 513 . . Solid-state
- 514 . . . With plural sensors
- 515 . Color separation
- 516 . . White balance correction
- 517 . . Color masking
- 518 . Color correction
- 519 . . Gamma correction
- 520 . . Hue, saturation and luminance

- 521 . . Gradation
- 522 . . With histogram
- 523 . . With memory for storage of conversion data
- 524 . Intermediate storage
- 525 . Interpolation
- 526 . With mark-forming function
- 527 . Color photography previewer
- 528 . Size variation
- 529 . Black signal synthesis
- 530 . Specific image-processing circuitry
- 531 . . Electronic retouch
- 532 . . Sharpness emphasizing
- 533 . . Moire reduction
- 534 . . Halftone processing
- 535 . . . Matrix
- 536 . . . Halftone screening
- 537 . . Image editing
- 538 . . Image portion selection
- 539 . . Image coding (encoder/decoder)
- 540 . . Composite image
- 400 **FACSIMILE**
- 401 . Image reproduction system
- 402 . Electronic mailbox
- 403 . Document filing and retrieval system
- 404 . Facsimile memory monitoring
- 405 . Image transmission accuracy verification
- 406 . Facsimile measuring, testing, or calibrating
- 407 . Facsimile relay system
- 408 . Plural scanner station
- 409 . Synchronization
- 410 . . Sync or phase pulse generator
- 411 . . Facsimile carrier as synchronization signal
- 412 . . Phase or speed regulation
- 413 . . . Start-stop
- 414 . . . With particular clutch mechanism
- 415 . . . With pendulum
- 416 . . . With tuning fork
- 417 . . . With strobe
- 418 . . . With movable phase shifter
- 419 . . . Receiver motor power transmitted from transmitter
- 420 . . . Receiver motor power source frequency change
- 421 . . . Receiver motor power source voltage change
- 422 . . . Receiver motor power source interruption
- 423 . . . With resistance variable in receiver motor power source
- 424 . . . Stylus
- 425 . Multiplex

- 426.01 . Reduced time or bandwidth for static image communication
- 426.02 .. Condition based selection or control of image coding technique or communication arrangement
- 426.03 ... Transfer rate of an uncoded or decoded image
- 426.04 ... Processing or analysis of an uncoded or decoded image
- 426.05 ... Storage arrangement or capacity
- 426.06 ... Amount of image data or code
- 426.07 ... Coding or decoding rate
- 426.08 ... Bandwidth or property of a communication medium
- 426.09 ... Communication error rate or level
- 426.1 ... Fill bit or dummy signal used
- 426.11 ... Coded image communication rate
- 426.12 .. Auxiliary information transmitted (e.g., required to perform or identify decoding technique)
- 426.13 .. Combined with lossless coding technique (e.g., fixed or variable run-length coding)
- 426.14 .. Combined with lossy coding technique (e.g., coding of quantized transform coefficients)
- 426.15 .. Coding for analog facsimile equipment (e.g., Group 1 or 2)
- 426.16 .. Coding for digital facsimile equipment (e.g., Group 3 or 4)
- 434 . Auxiliary signal
- 435 .. Transmitter and receiver both supply auxiliary signal(s)
- 436 ... Auxiliary signal controls apparatus at both transmitter and receiver
- 437 .. Interruption detection and control
- 438 .. Transmitter supplies auxiliary signal(s)
- 439 .. Receiver supplies auxiliary signal(s)
- 440 .. Telephone number or address of designator
- 441 .. Facsimile alarm
- 442 . Facsimile system interface
- 443 . Specific signal processing circuitry
- 444 .. Memory interface
- 445 .. Signal sampling and conversion
- 446 .. Signal voltage or gain control
- 447 .. Signal enhancing
- 448 .. Image processing
- 461 ... Shade correction
- 449 ... Document size detection
- 450 ... Plural images combined into a single image
- 451 ... Picture size conversion
- 452 ... Image editing
- 453 ... Image portion selection
- 462 ... Text and image detection and processing
- 463 ... Noise elimination
- 464 ... To distinguish intelligence from background
- 465 ... Picture signal thresholding

466 Variable thresholding technique
468 . . Facsimile control unit
469 . . Carrier wave modulation
470 . Coded character
471 . Picture signal generator
472 . . Combined read and write head
473 . . Hand-held reader
474 . . Scanning
475 . . . Facsimile illumination control
476 . . . Transceiver
477 . . . Nonlight
478 Stylus type
479 . . . Facsimile video
480 . . . Coherent light
481 Including a polygon reflector
482 . . . Solid state
483 Charge coupled device
484 . . . Fiber optics or optical waveguides
485 . . . Cathode-ray tube
486 . . . Scan rate or document movement variation in
accordance with data presence
487 . . . Facsimile transparency image scanning
488 . . . Document position detection
489 . . . Helical scanning pattern
490 Transparent drum
491 Internal scan
492 Specified sheet clamp
493 . . . Curved scanning surface
494 . . . Linear scanning pattern
495 Spiral or helix aperture with linear aperture
496 Document moves during scanning
497 Scanning element moves relative to a flat
stationary document
498 . . . Document feed
296 . Recording apparatus
300 . . Electrostatic or electrolytic
301 . . Magnetic
302 . . Photographic
303 . . Pressure (e.g., on carbon paper)
304 . . With paper cutter
305 **MISCELLANEOUS**

CROSS-REFERENCE ART COLLECTIONS

901.1 **FIBER OPTICS**
906 **HAND-HELD CAMERA WITH RECORDER IN A
SINGLE UNIT**
907 **TRACK SKIPPERS (I.E., "GROOVE SKIPPERS")**
908 **PAUSE CONTROL (I.E., "COMMERCIAL
KILLERS")**
909.1 **ELECTRONIC STILL CAMERA OR SCENE
REPRODUCER**

FOREIGN ART COLLECTIONS**FOR 000 CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collection listed below. These collections contain ONLY foreign patents or nonpatent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

FOR 142 STATIC PRESENTATION PROCESSING (E.G., FOR A PRINTER) (395/101)

- FOR 143 . Size or scale control (395/102)
- FOR 144 . Plotter (395/103)
- FOR 145 . Plural marking means (395/104)
- FOR 146 . Position or velocity determined (395/105)
- FOR 147 . Specific to image source (395/106)
- FOR 148 . Flying dot (e.g., laser beam) (395/107)
- FOR 149 . Dot matrix array (e.g., printheads) (395/108)
- FOR 150 . Attribute control (395/109)
- FOR 151 . Character or font (395/110)
- FOR 152 . Details of medium positioning (e.g., movement to
or from presentation location of medium) (395/111)
- FOR 153 . Emulation or plural modes (395/112)
- FOR 154 . Data corruption, power interruption, or print
prevention (395/113)
- FOR 155 . With communications (e.g., data compression,
data expansion, plural devices) (395/114)
- FOR 156 . Memory (395/115)
- FOR 157 . . Page or frame memory (395/116)
- FOR 158 . Details of image placement or content (395/117)

CLASS 382 IMAGE ANALYSIS**100 APPLICATIONS**

- 101 . Mail processing
- 102 . . ZIP code
- 103 . Target tracking or detecting
- 104 . Vehicle or traffic control (e.g., auto, bus, or train)
- 105 . . License plate
- 106 . Range or distance measuring
- 107 . Motion or velocity measuring
- 108 . Surface texture or roughness measuring
- 109 . Seismic or geological sample measuring
- 110 . Animal, plant, or food inspection
- 111 . Textiles or clothing
- 112 . Document or print quality inspection (e.g., newspaper, photographs, etc.)
- 113 . Reading maps, graphs, drawings, or schematics
- 114 . Reading aids for the visually impaired
- 115 . Personnel identification (e.g., biometrics)
- 116 . . Using a combination of features (e.g., signature and fingerprint)
- 117 . . Using a characteristic of the eye
- 118 . . Using a facial characteristic
- 119 . . Using a signature
- 120 . . . Sensing pressure together with speed or acceleration
- 121 . . . Sensing pressure only
- 122 . . . Sensing speed or acceleration only
- 123 . . . Sensing geometrical properties
- 124 . . Using a fingerprint
- 125 . . . Extracting minutia such as ridge endings and bifurcations
- 126 . . . With a guiding mechanism for positioning finger
- 127 . . . With a prism
- 128 . Biomedical applications
- 129 . . DNA or RNA pattern reading
- 130 . . Producing difference image (e.g., angiography)
- 131 . . Tomography (e.g., CAT scanner)
- 132 . . X-ray film analysis (e.g., radiography)
- 133 . . Cell analysis, classification, or counting
- 134 . . . Blood cells
- 135 . Reading paper currency
- 136 . Reading coins
- 137 . Reading bank checks (e.g., documents bearing E-13B type characters)
- 138 . . Reading monetary amount
- 139 . . Reading MICR data

- 140 . . . Including an optical imager or reader
- 141 . Manufacturing or product inspection
- 142 . . Bottle inspection
- 143 . . Inspection of packaged consumer goods
- 144 . . Mask inspection (e.g., semiconductor
photomask)
- 145 . . Inspection of semiconductor device or printed
circuit board
- 146 . . . Measuring external leads
- 147 . . . Inspecting printed circuit boards
- 148 . . . At plural magnifications or resolutions
- 149 . . . Fault or defect detection
- 150 Faulty soldering
- 151 . . . Alignment, registration, or position
determination
- 152 . . Tool, workpiece, or mechanical component
inspection
- 153 . Robotics
- 154 . 3-D or stereo imaging analysis
- 155 **LEARNING SYSTEMS**
- 156 . Neural networks
- 157 . . Network learning techniques (e.g., back
propagation)
- 158 . . Network structures
- 159 . Trainable classifiers or pattern recognizers (e.g.,
adaline, perceptron)
- 160 . . Generating a standard by statistical analysis
- 161 . . Alphanumerics
- 162 **COLOR IMAGE PROCESSING**
- 163 . Drop-out color in image (i.e., color to be
removed)
- 164 . Image segmentation using color
- 165 . Pattern recognition or classification using color
- 166 . Compression of color images
- 167 . Color correction
- 168 **HISTOGRAM PROCESSING**
- 169 . With a gray-level transformation (e.g., uniform
density transformation)
- 170 . With pattern recognition or classification
- 171 . For segmenting an image
- 172 . For setting a threshold
- 173 **IMAGE SEGMENTATION**
- 174 . Using projections (i.e., shadow or profile of
characters)
- 175 . Separating document regions using preprinted
guides or markings
- 176 . Distinguishing text from other regions
- 177 . Segmenting individual characters or words
- 178 . . Separating touching or overlapping characters
- 179 . . Segmenting hand-printed characters
- 180 . Region labeling (e.g., page description language)

181 PATTERN RECOGNITION

- 182 . Limited to specially coded, human-readable characters
- 183 .. Characters formed entirely of parallel bars (e.g., CMC-7)
- 184 .. With separate timing or alignment marks
- 185 . Ideographic characters (e.g., Japanese or Chinese)
- 186 . Unconstrained handwriting (e.g., cursive)
- 187 . On-line recognition of handwritten characters
- 188 .. Writing on ordinary surface (i.e., electronics are in pen)
- 189 .. With a display
- 190 . Feature extraction
- 191 .. Multispectral features (e.g., frequency, phase)
- 192 .. Feature counting
- 193 ... Counting intersections of scanning lines with pattern
- 194 ... Counting individual pixels or pixel patterns
- 195 .. Local or regional features
- 196 ... Slice codes
- 197 ... Directional codes and vectors (e.g., Freeman chains, compasslike codes)
- 198 Extracted from alphanumeric characters
- 199 ... Pattern boundary and edge measurements
- 200 Measurements made on alphanumeric characters
- 201 ... Point features (e.g., spatial coordinate descriptors)
- 202 ... Linear stroke analysis (e.g., limited to straight lines)
- 203 ... Shape and form analysis
- 204 Topological properties (e.g., number of holes in a pattern, connectivity, etc.)
- 205 ... Local neighborhood operations (e.g., 3x3 kernel, window, or matrix operator)
- 206 .. Global features (e.g., measurements on image as a whole, such as area, projections, etc.)
- 207 .. Waveform analysis
- 208 ... With a tapped delay line
- 209 . Template matching (e.g., specific devices that determine the best match)
- 210 .. Spatial filtering (e.g., holography)
- 211 ... With electrically controlled light modulator or filter
- 212 .. Nonholographic optical mask or transparency
- 213 ... Using both positive and negative masks or transparencies
- 214 ... With a display
- 215 .. Using dynamic programming or elastic templates (e.g., warping)
- 216 .. At multiple image orientations or positions
- 217 .. Electronic template

- 218 . . . Comparator
- 219 Determining both similarities and differences
- 220 Calculating weighted similarity or difference
(e.g., don't-care areas)
- 221 Counting difference pixels
- 222 Using an Exclusive-OR gate
- 223 . . . Resistor matrix
- 224 . Classification
- 225 . . Cluster analysis
- 226 . . Sequential decision process (e.g., decision tree
structure)
- 227 . . . With a multilevel classifier
- 228 . . Statistical decision process
- 229 . Context analysis or word recognition (e.g.,
character string)
- 230 . . Trigrams or digrams
- 231 . . Checking spelling for recognition
- 232 **IMAGE COMPRESSION OR CODING**
- 233 . Including details of decompression
- 234 . Parallel coding architecture
- 235 . Substantial processing of image in compressed
form
- 236 . Interframe coding (e.g., difference or motion
detection)
- 237 . Gray level to binary coding
- 238 . Predictive coding
- 239 . Adaptive coding (i.e., changes based upon
history, activity, busyness, etc.)
- 240 . Pyramid, hierarchy, or tree structure
- 241 . Polygonal approximation
- 242 . Contour or chain coding (e.g., Bezier)
- 243 . Shape, icon, or feature-based compression
- 244 . Lossless compression
- 245 . . Run-length coding
- 246 . . Huffman or variable-length coding
- 247 . . Arithmetic coding
- 248 . Transform coding
- 249 . . Fractal
- 250 . . Discrete cosine or sine transform
- 251 . Quantization
- 252 . . Error diffusion or dispersion
- 253 . . Vector quantization
- 254 **IMAGE ENHANCEMENT OR RESTORATION**
- 255 . Focus measuring or adjusting (e.g., deblurring)
- 256 . Object boundary expansion or contraction
- 257 . . Dilation or erosion (e.g., opening or closing)
- 258 . . Line thinning or thickening
- 259 . . . Skeletonizing
- 260 . Image filter
- 261 . . Adaptive filter
- 262 . . Median filter

- 263 .. Highpass filter (i.e., for sharpening or enhancing details)
- 264 .. Lowpass filter (i.e., for blurring or smoothing)
- 265 .. Recursive filter
- 266 . Edge or contour enhancement
- 267 .. Minimize discontinuities in dot-matrix image data (i.e., connecting or merging the dots)
- 268 .. Minimize discontinuities at boundaries of image blocks (i.e., reducing blocking effects or effects of wrap-around)
- 269 .. Minimize jaggedness in edges (e.g., anti-aliasing)
- 270 . Variable threshold, gain, or slice level
- 271 .. Based on the results of a count
- 272 .. Based on a local average, mean, or median
- 273 .. Based on peak levels
- 274 . Intensity, brightness, contrast, or shading correction
- 275 . Artifact removal or suppression (e.g., distortion correction)
- 276 **IMAGE TRANSFORMATION OR PREPROCESSING**
- 277 . Transforming each dimension separately
- 278 . Correlation
- 279 . Convolution
- 280 . Fourier transform
- 281 . Walsh, Hough, or Hadamard transform
- 282 . Selecting a portion of an image
- 283 .. Using a mask
- 284 . Combining image portions (e.g., portions of oversized documents)
- 285 . Mapping 2-D image onto a 3-D surface
- 286 . Measuring image properties (e.g., length, width, or area)
- 287 .. Detecting alignment marks
- 288 .. Determining center of gravity or moment
- 289 .. Determining amount an image is rotated or skewed
- 290 ... Where the image is a character, word, or text
- 291 .. Determining the position of an object
- 292 ... Where the object is a character, word, or text
- 293 . Changing the image coordinates
- 294 .. Registering or aligning multiple images to one another
- 295 .. To position or translate an image
- 296 .. To rotate an image
- 297 ... Rotation of image is limited to 90 degrees, 180 degrees, or 270 degrees
- 298 .. To change the scale or size of an image
- 299 ... Raising or lowering the image resolution (e.g., subpixel accuracy)
- 300 Interpolation
- 301 ... Where the image is an alphanumeric character

- 302 . Multilayered image transformations
- 303 . . Pipeline processing
- 304 . . Parallel processing
- 305 . Image storage or retrieval
- 306 . . Using identification indicia on document
- 307 . General purpose image processor
- 308 . . Morphological operations (i.e., local
neighborhood operations)
- 309 **EDITING, ERROR CHECKING, OR CORRECTION**
(E.G., POSTRECOGNITION PROCESSING)
- 310 . Correcting alphanumeric recognition errors
- 311 . Including operator interaction
- 312 **IMAGE SENSING**
- 313 . Hand-held
- 314 . . Sensing mechanism in stylus
- 315 . . Sensing mechanism in platen
- 316 . Curve tracer
- 317 . Sensor control (e.g., OCR sheet controls copier
or fax)
- 318 . Multiple scanning
- 319 . . Prescanning
- 320 . Magnetic
- 321 . Optical (e.g., OCR)
- 322 . . Single spot
- 323 . . Single line
- 324 . . Full retina
- 325 **MISCELLANEOUS**

FOREIGN ART COLLECTIONS**FOR 000 CLASS-RELATED FOREIGN DOCUMENTS**

**CLASS 345 COMPUTER GRAPHICS PROCESSING,
OPERATOR INTERFACE PROCESSING, AND
SELECTIVE VISUAL DISPLAY SYSTEMS**

418 **COMPUTER GRAPHICS PROCESSING**
419 . Three-dimension
420 .. Solid modelling
421 .. Hidden line/surface determining
422 ... Z buffer (depth buffer)
423 .. Tessellation
424 .. Voxel
426 .. Lighting/shading
427 .. Space transformation
428 . Adjusting level of detail
581 . Attributes (surface detail or characteristic,
 display attributes)
582 .. Texture
583 ... Solid Texture
584 ... Bump map
585 ... Non-planar surface
586 ... Mathematically defined
587 ... MIP map
588 ... Repeating pattern
589 .. Color or intensity
590 ... Gamut clipping or adjustment
591 ... Color processing in perceptual color space
592 ... Transparency (mixing color values)
593 ... Color selection
594 Using GUI
595 Expert system or AI
596 ... Dither or halftone
597 Color
598 Spatial
599 Spatial
600 ... Color bit data modification or conversion
601 Using look up table
602 Plural look up tables
603 Format change (e.g., NTSC to RGB, RGB to
 composite, XYZ to RGB)
604 Color space transformation (e.g., RGB to
 YUV)
605 Change in number of bits for a designated
 color (e.g., 4 bits to 8 bits, 8 bits to 4 bits)
606 .. Interpolation of attribute values across object
 surface
607 ... In perspective
608 ... Tri-linear
609 ... Bi-linear

- 610 ... Linear
- 611 .. Anti-aliasing or image smoothing
- 612 ... Save attributes for each object affecting a
 given pixel
- 613 ... Subpixel processing
- 614 ... Pixel fragment
- 615 ... Convolving technique
- 616 ... Error diffusion
- 617 .. Contrast
- 618 .. Image with abnormal condition
- 619 . Graphic manipulation (object processing or
 display attributes)
- 620 .. Clipping
- 621 ... Based on model of objects
- 622 Testing or using bounding shape (e.g.,
 bounding box sphere)
- 623 Object clipped to view volume
- 624 Object clipped to another object
- 625 ... Based on image data
- 626 Masking
- 627 Non-rectangular array
- 628 Rectangular region
- 629 .. Merge or overlay
- 630 ... Combining model representations
- 631 ... Reducing redundancy
- 632 ... Placing generated data in real scene
- 633 Augmented reality (real-time)
- 634 ... Image based
- 635 Non-overlapping
- 636 Character and graphics
- 637 Priority based
- 638 Insertion of bitmapped moving picture
- 639 Weighted
- 640 Weights vary across image (e.g., transition
 from foreground to background)
- 641 Fixed overlay pattern
- 642 .. Picking
- 643 .. Arithmetic processing of image data
- 644 ... Matrix calculations
- 645 ... Hierarchy of transformations (e.g., hierarchy of
 global and local coordinate)
- 646 .. Morphing
- 647 .. Distortion
- 648 .. Affine
- 649 .. Rotation
- 650 ... Graphical user interface tools
- 651 Alignment functions (e.g., snapping, gravity)
- 652 Constrained manipulations (e.g., movement in
 less than all dimensions)
- 653 3D manipulations
- 654 2D manipulations

- 655 ... Object based
- 656 ... Image based (addressing)
- 657 By arbitrary angle
- 658 By 90 degrees increment
- 659 Image rotates in response to display device
 orientation
- 660 .. Scaling
- 661 ... Graphical user interface tools
- 662 Alignment functions (e.g., snapping, gravity)
- 663 Constrained manipulations (i.e., movement in
 less than all dimensions)
- 664 3D manipulations
- 665 2D manipulations
- 666 ... Object based
- 667 ... Image based (addressing)
- 668 By arbitrary ratio
- 669 By integer multiples
- 670 Reduction only
- 671 Enlargement only
- 672 .. Translation
- 673 ... Averaging technique
- 674 ... Copying data to create additional rows or
 columns
- 676 ... Graphical user interface tools
- 677 Alignment functions (e.g., snapping, gravity)
- 678 Constrained manipulations (i.e., movement in
 less than all dimensions)
- 679 3D manipulations
- 680 2D manipulations
- 681 ... Object based
- 682 ... Image based (addressing)
- 683 Sprite
- 684 Scrolling
- 685 Alphanumeric
- 686 Memory addressing
- 687 Smooth or continuous
- 688 Attribute changes during scrolling
- 689 .. Textual entry or display of manipulation
 information (e.g., enter or display degree of rotation)
- 440 . Graph generating
- 440.1 .. Real-time waveform display
- 440.2 .. Bar graph
- 441 . Shape generating
- 442 .. Curve
- 443 .. Straight line
- 467 . Character generating
- 468 .. Character geometry processing
- 469 ... Character generation using control points or
 hints
- 469.1 .. Character border
- 470 .. Generating character fill data from outline data

- 471 .. Alteration of stored font
- 472 ... Scaling
- 472.1 Reduction only
- 472.2 Enlargement only
- 472.3 .. Calligraphic
- 473 . Animation
- 474 .. Motion planning or control
- 475 .. Temporal interpolation or processing
- 700 **OPERATOR INTERFACE (E.G., GRAPHICAL USER INTERFACE)**
- 701 . Force feedback interaction
- 702 . Tactile based interaction
- 703 . Cultural based (including language, time, monetary units displayed)
- 704 . Playback of recorded user events (e.g., script or macro playback)
- 705 . Help presentation
- 706 .. Virtual character or avatar (e.g., animated person)
- 707 .. Adaptive to user skill level
- 708 .. Context sensitive
- 709 ... Coaching (e.g., animated examples, or handholding or show me execution)
- 710 ... Input alert
- 711 ... Tool tip (e.g., cursor position based)
- 712 ... Topic roadmap or index
- 713 Hierarchical
- 714 .. Combining diverse help information (e.g., different sources)
- 715 .. Balloon or bubble appearance
- 716 . On screen video or audio system interface
- 717 .. Multiple diverse systems
- 718 ... Mode switching interface (e.g., switching between TV and computer)
- 719 .. Video interface
- 720 ... Video traversal control
- 721 ... Indexed control
- 722 ... Video parameter control
- 723 .. For video segment editing or sequencing
- 724 ... Cut and paste operation
- 725 ... Trimming
- 726 ... Effects or transitions interface
- 727 . Audio user interface
- 728 .. Audio input for on-screen manipulation (e.g., voice controlled GUI)
- 729 .. For a visually challenged user
- 730 . Presentation to audience interface (e.g., slide show)
- 731 .. Authoring tool
- 732 .. Slide manipulating or editing
- 733 . For plural users or sites (e.g., network)

- 734 . . Interactive network representation of devices
(e.g., topology of workstations)
- 735 . . . Configuration
- 736 . . . Network managing or monitoring status
- 737 . . . User navigation between devices
- 738 . . Network resource browsing or navigating
- 739 . . . Selecting from a resource list (e.g., address
book)
- 740 . . Remote operation of computing device
- 741 . . Access control or permission
- 742 . . . Interactive portal (e.g., secure point of
access)
- 743 . . . Access rights to interactive controls
- 744 . . Interface customization or adaption (e.g., client
server)
- 745 . . . Based on stored usage or user profile (e.g.,
frequency of use, cookies)
- 746 . . . Interface conversion
- 747 . . . End user based (e.g., preference setting)
- 748 . User interactive multicomputer data transfer
(e.g., file transfer)
- 749 . . Downloading remote executables (e.g., Java,
CGI)
- 750 . Multiple users on a single workstation
- 751 . Computer supported collaborative work between
plural users
- 752 . . Interactive email
- 753 . . Computer conferencing
- 754 . . . Multicursor (e.g., multiple on-screen pointers)
- 755 . . . Floor Control
- 756 . . . Real Time Video
- 757 . . . Virtual 3D environment
- 758 . . . Chat room
- 759 . . Group window
- 760 . Mark up language interface (e.g., HTML)
- 761 . Plural adjacent interactive display devices
- 762 . User interface development (e.g., GUI builder)
- 763 . . Graphical or iconic based (e.g., visual program)
- 764 . On-screen workspace or object
- 765 . . Customizing multiple diverse workspace objects
- 766 . . Z order of multiple diverse workspace objects
- 767 . . Focus control of multiple diverse workspace
objects
- 768 . . Translucency or transparency interface element
(e.g., invisible control)
- 769 . . Data transfer operation between objects (e.g.,
drag and drop)
- 770 . . . Cut and paste
- 771 . . Instrumentation and component modeling (e.g.,
interactive control panel, virtual device)
- 772 . . . Progress or activity indicator
- 773 . . . Virtual input device (e.g., virtual keyboard)

774 .. Ticker metaphor
775 .. Office layout metaphor (e.g., filing cabinet,
desk)
776 .. Indexed book or notebook metaphor
777 .. Tab metaphor (e.g., property sheet)
778 .. Multiple virtual screen or desktop switching
779 .. Task bar or desktop control panel
780 .. Entry field (e.g., text entry field)
781 .. Window or viewpoint
782 ... 3D Perspective view of window layout
783 ... On-screen window list or index
784 ... Window scrolling
785 Autoscroll
786 Scroll tool (e.g., scroll bar)
787 With content attributes on scroll tool
788 ... Layout modification (e.g., move or resize)
789 Based on usage or user profile (e.g.,
frequency of use)
790 Overlap control
791 Always on top
792 Tiling or split pane
793 Cascading
794 Priority or overlap change (e.g., z-order)
795 Minimizing or send to bottom
796 Bring to top
797 Viewing lower priority windows (e.g.,
overlapped windows)
798 Combining moving and resizing operations
(e.g., moving causes resizing)
799 Moving (e.g., translating)
800 Resizing (e.g., scaling)
801 Contained object scale change
802 ... Focus control
803 ... Window differentiation
804 ... Interwindow link or communication
805 On-screen link or communication (e.g., cue)
806 ... Window memory structure
807 Stored priority attribute
808 .. Pop-up control
809 .. Dialog box
810 .. Menu or selectable iconic array (e.g., palette)
811 ... Based on usage or user profile (e.g., frequency
of use)
812 Preselection (e.g., best guess before mouse
click)
813 Default selection item
814 ... Limited time selection opportunity
815 ... Sizing modification (e.g., scaling)
816 ... Partial input lookup (e.g., partial string lookup)
817 ... Context location indication (e.g., previous or
next menu item indication)

- 818 Simultaneous next and previous indication
(e.g., menu road map)
- 819 Next menu indication
- 820 Previous menu indication
- 821 . . . Emphasis
- 822 Preselection emphasis
- 823 Selection or confirmation emphasis
- 824 Unavailable emphasis
- 825 . . . Dynamically generated menu items
- 826 . . . Add on item (e.g., software developed,
customized)
- 827 . . . Mnemonic (e.g., accelerator key)
- 828 . . . Partial menu display (e.g., one menu item at a
time)
- 829 Advancing to next menu item in the same
menu
- 830 Scrolling (e.g., spin dial)
- 831 With specific input device
- 832 . . . Analog selection style
- 833 . . . Slider control
- 834 . . . Radial based (e.g., radial or pie menu)
- 835 . . . Selectable iconic array
- 836 3D icons
- 837 Compound or aggregate icon
- 838 Thumbnail or scaled image
- 839 Imitating real life object
- 840 . . . Using button array
- 841 . . . Sub-menu structure
- 842 Tear off
- 843 Pull down
- 844 . . . Timed
- 845 . . . Multiple selections in a single menu
- 846 . . Non-array icons
- 847 . . . Shortcut
- 848 . . Interface represented by 3D space
- 849 . . . Individual object
- 850 . . . Navigation within 3D space
- 851 On-screen navigation control
- 852 . . . Picking 3D objects
- 853 . . Hierarchy or network structure
- 854 . . . Navigation within structure
- 855 On-screen roadmap or index
- 856 . . Cursor
- 857 . . . Pointer direction adjustment
- 858 . . . Automatic position adjustment
- 859 . . . Status indicator
- 860 Selection emphasis
- 861 Dynamically changed appearance (e.g.,
animated or live action)
- 862 . . . Proximity detection

- 863 . Gesture-based
- 864 . For a small display screen (e.g., personal digital assistant, palm-top)
- 865 . Miscellaneous interface for the handicapped or disabled user
- 866 . Miscellaneous customization or adaptation
- 867 **SCREEN SAVER DISPLAY**
- 156 **DISPLAY PERIPHERAL INTERFACE INPUT DEVICE**
- 157 . Cursor mark position control device
- 158 . . Including orientation sensors (e.g., infrared, ultrasonic, remotely controlled)
- 159 . . Having variable cursor speed
- 160 . . Cursor key
- 161 . . Joystick
- 162 . . Positional storage means
- 163 . . Mouse
- 164 . . . Rotatable ball detector
- 165 Photosensor encoder
- 166 . . . Optical detector
- 167 . . Trackball
- 168 . Including keyboard
- 169 . . Portable (i.e., handheld, calculator, remote controller)
- 170 . . Light source associated with each key
- 171 . . Having foreign language capability (e.g., Japanese, Chinese)
- 172 . . Having programmable function key
- 173 . Touch panel
- 174 . . Including impedance detection
- 175 . . Including optical detection
- 176 . . Transparent substrate having light entrapment capability (i.e., waveguides)
- 177 . . Including surface acoustic detection
- 178 . . With alignment or calibration capability (i.e., parallax problem)
- 179 . Stylus
- 180 . Light pen for CRT display
- 181 . . CRT having tracking capability
- 182 . Light pen for fluid matrix display panel
- 183 . Light pen for controlling plural light-emitting display elements (e.g., LED, lamps)
- 184 . Mechanical control (e.g., rotatable knob, slider)
- 501 **COMPUTER GRAPHIC PROCESSING SYSTEM**
- 502 . Plural graphics processors
- 503 . . Coprocessor (e.g., graphic accelerator)
- 504 . . Master-slave processors
- 505 . . Parallel processors (e.g., identical processors)
- 506 . . Pipeline processors
- 519 . Integrated circuit (e.g., single chip semiconductor device)

- 520 . Interface (e.g., controller)
- 522 . Graphic command processing
- 530 **COMPUTER GRAPHICS DISPLAY MEMORY SYSTEM**
- 531 . Graphic display memory controller
- 532 .. Plural memory controllers
- 533 .. Using different access modes
- 534 .. Memory access timing signals
- 535 .. Memory arbitration
- 536 . Plural storage devices
- 537 .. Data transfer between memories
- 538 ... Data transfer between system memory display memory
- 539 .. Double buffered
- 540 .. Interleaved
- 541 . Shared memory
- 542 .. Unified memory architecture (e.g., UMA)
- 543 . Memory allocation
- 544 . Memory partitioning
- 545 . Frame buffer
- 546 .. Multi-format frame buffer
- 547 .. Memory for storing video data
- 548 .. Off-screen memory
- 549 .. Color memory
- 550 ... Multiple planes
- 551 .. Character memory
- 552 . Texture memory
- 553 . Display list memory
- 554 . Multi-port memory
- 555 . For storing compressed data
- 556 . For storing condition code, flag or status
- 557 . Cache
- 558 . First in first out (i.e., FIFO)
- 559 . Register
- 560 . Row buffer (e.g., line memory)
- 561 . Logical operations
- 562 .. Bit block transfer
- 563 .. Mask data operation
- 564 . Addressing
- 565 .. Using memory for storing address information
- 566 .. Address manipulation
- 567 ... Using decoding
- 568 ... Address translation (e.g., between virtual and physical addresses)
- 569 .. For 2D coordinate to linear address conversion
- 570 .. Page mode
- 571 .. Memory addresses arranged in matrix row and column addresses)
- 572 .. Address generator
- 573 ... Plural address generators

- 574 . . . Read/Write address generator
- 204 **DISPLAY DRIVING CONTROL CIRCUITRY**
- 205 . Physically integral with display elements
- 206 . . Having common base or substrate
- 207 . Light detection means (e.g., with photodetector)
- 690 . Intensity or color driving control (e.g., gray scale)
- 691 . . Temporal processing (e.g., pulse width variation over time)
- 692 . . . Binary weighted
- 693 . . . Non-binary weighted
- 694 . . Spatial processing (e.g., patterns or subpixel configuration)
- 695 . . . Subpixels have different shapes
- 696 . . . Changing of subpixel location over time
- 697 . . Including optical means
- 698 . Adjusting display pixel size or pixels per given area (i.e., resolution)
- 699 . . Controller automatically senses monitor resolution
- 208 . Waveform generator coupled to display elements
- 209 . . Field period polarity reversal
- 210 . . Having three or more voltage levels
- 211 . Display power source
- 212 . . Regulating means
- 213 . . Synchronizing means
- 214 . Controlling the condition of display elements
- 215 . . Including priming means
- 1.1 **PLURAL DISPLAY SYSTEMS**
- 1.2 . Data transmitted or received at surface of display
- 1.3 . Tiling or modular adjacent displays
- 2.1 . Remotely located
- 2.2 . . Presentation of similar images
- 2.3 . . Wireless connection
- 3.1 . Diverse systems (e.g., CRT or LCD interface)
- 3.2 . . Frame, field or scan rate conversion
- 3.3 . . Number of pixels per row or column conversion (i.e., resolution conversion)
- 3.4 . . . Controller automatically senses monitor resolution
- 4 **SINGLE DISPLAY SYSTEM HAVING STACKED SUPERIMPOSED DISPLAY DEVICES (E.G., TANDEM)**
- 5 . Diverse display devices
- 6 . Three-dimensional arrays
- 7 **IMAGE SUPERPOSITION BY OPTICAL MEANS (E.G., HEADS-UP DISPLAY)**
- 8 . Operator body-mounted heads-up display (e.g., helmet mounted display)
- 9 . Plural image superposition
- 10 **DATA RESPONSIVE CRT DISPLAY CONTROL**
- 11 . CRT provides display control

- 12 . Data responsive deflection and intensity control
- 13 . Data responsive deflection control
- 14 .. X and Y axis deflection control
- 15 .. Curvilinear deflection control (e.g., lissajous)
- 16 .. Stroke or vector
- 17 ... Strokes for forming characters
- 18 ... Up/down counter
- 19 .. Impedance Array
- 20 . Data responsive intensity control
- 21 .. Magnetic element array
- 22 . Color display
- 23 . Graphic and alphanumeric display
- 24 . Graphic display
- 25 . Alphanumeric display
- 26 .. Character generator
- 27 . Combined with storage means
- 28 .. Addressing
- 29 . Delay line
- 30 **PLURAL PHYSICAL DISPLAY ELEMENT CONTROL
SYSTEM (E.G., NON-CRT)**
- 31 . Physically movable array
- 32 . Optical means interposed in viewing path (e.g.,
filters, lens, etc.)
- 33 . Segmented display elements
- 34 .. Seven segment display
- 35 .. Bar graph
- 36 ... Electroluminescent display elements
- 37 ... Gas discharge display segments (e.g., plasma)
- 38 ... Liquid crystal display segments
- 39 ... Light-emitting diode segments (LEDS)
- 40 ... Plural (e.g., stacked, adjacent)
- 41 .. Fluid light-emitting display elements (e.g., gas,
plasma)
- 42 ... Controlling circuitry
- 43 .. Mask or electrode shape
- 44 .. Solid light-emitting display elements
- 45 ... Electroluminescent
- 46 ... Light-emitting diodes
- 47 .. Fluorescent elements
- 48 .. Light-controlling display elements
- 49 ... Electrochromic elements
- 50 ... Liquid crystal elements
- 51 Display element selection circuitry
- 52 Power supply generating circuitry
- 53 Specific waveform (e.g., square waveforms,
sinusoidal)
- 54 Field period polarity reversal
- 55 . Display elements arranged in matrix (e.g., rows
and columns)
- 56 .. Image shifting means (i.e., traveling message)

- 57 ... Having endless belt or tape reader
- 58 .. Crosstalk elimination
- 59 .. Matrix for conveying alphanumeric data
- 60 .. Fluid light emitter (e.g., gas, liquid, or plasma)
- 61 ... Shifting means
- 62 Specified plasma coupling path
- 63 ... Intensity control
- 64 ... Liquid light emitter
- 65 ... Phosphor excited by fluid response
- 66 ... Particular discharge path
- 67 ... More than two electrodes per element
- 68 ... Means for combining selective and sustain signals
- 69 Resistor-diode arrangement
- 70 Including transformer
- 71 ... Electrode insulated from fluid medium
- 72 ... Color
- 73 .. Incandescent
- 74.1 .. Cathodoluminescent type
- 75.1 ... Vacuum fluorescent
- 75.2 ... Field emissive (e.g., FED, Spindt, microtip, etc.)
- 76 .. Electroluminescent
- 77 ... Brightness or intensity control
- 78 ... Having compensating pulse
- 79 ... Field period polarity reversal
- 80 ... Driving means integral to substrate
- 81 ... Optical addressing (e.g., photodetection)
- 82 .. Solid body light emitter (e.g., LED)
- 83 ... Color
- 84 .. Light-controlling display elements
- 85 ... Electroscopic (e.g., movable electrodes or electrostatic elements)
- 86 ... Magneto-optic
- 87 ... Liquid crystal display elements (LCD)
- 88 Color
- 89 Gray scale capability (e.g., halftone)
- 90 Control means at each display element
- 91 Diode or varistor
- 92 Thin film transistor (TFT)
- 93 Redundancy (e.g., plural control elements or electrodes)
- 94 Waveform generation
- 95 Three or more voltages
- 96 Field period polarity reversal
- 97 Ferroelectric liquid crystal elements
- 98 Specific display element control means (e.g., latches, memories, logic)
- 99 Particular timing circuit
- 100 Particular row or column control (e.g., shift register)

- 101 Data signal compensation in response to temperature
- 102 Backlight control
- 103 Grouped electrodes (e.g., matrix partitioned into sections)
- 104 Input/output liquid crystal display panel
- 105 . . . Electrochromic elements
- 106 . . . Thermochromic elements
- 107 . . . Particle suspensions (e.g., electrophoretic)
- 108 . . Plural mechanically movable display elements
- 109 . . . Having shutters
- 110 . . . With motor or rotor driver means
- 111 . . . With a permanent magnet placed on movable display elements

CROSS-REFERENCE ART COLLECTIONS

- 901 **ELECTRONIC BOOK WITH DISPLAY**
- 902 **MENU DISPLAY**
- 903 **MODULAR DISPLAY**
- 904 **DISPLAY WITH FAIL/SAFE TESTING FEATURE**
- 905 **DISPLAY DEVICE WITH HOUSING STRUCTURE**
- 947 **FONT CHARACTER EDGE PROCESSING**
- 948 **ALTERATION OF STORED FONTS TO MAINTAIN FEATURE CONSISTENCY THROUGHOUT SCALED FONT**
- 949 **ANIMATION PROCESSING METHOD**
- 950 . Sprite processing
- 951 . . Key frame processing
- 952 . Simulation
- 953 . Geometric processing
- 954 . . Quaternions
- 955 . Morphing
- 956 . Language driven animation
- 957 . . Actor
- 958 . Collision avoidance
- 959 . Object path adherence
- 960 . Iterative display of preconfigured images
- 961 **OPERATOR INTERFACE WITH VISUAL STRUCTURE OR FUNCTION DICTATED BY INTENDED USE**
- 962 . Operator interface for marketing or sales
- 963 . Calendar or scheduling
- 964 . CAD or CAM (e.g., interactive design tools)
- 965 . For process control and configuration
- 966 . . Computer process (e.g., operation of computer)
- 967 . . . Visual or iconic programming
- 968 . . . Interface for database querying and retrieval
- 969 . . Network layout and operation interface
- 970 . . Instrumentation and component modelling (e.g., interactive control panel)
- 970.1 . Amusement or marital aid interface
- 971 **COOPERATIVE DECISION SUPPORT SYSTEMS FOR GROUPS OF USERS**

- 972 **INSERTED REAL-TIME VIDEO IN OPERATOR INTERFACE**
- 973 **SCROLL TOOL (E.G., WINDOW SCROLL BARS)**
- 974 **SLIDER CONTROLS AS ON-SCREEN OBJECTS IN OPERATOR INTERFACE**
- 975 **POP-UP DIALOG BOX FOR ENTRY**
- 976 **3-D ICONS**
- 977 **DYNAMIC ICON (E.G., ANIMATED OR LIVE ACTION)**
- 978 **AUDIO INTERACTION AS PART OF AN OPERATOR INTERFACE**

FOREIGN ART COLLECTIONS

FOR 000 CLASS-RELATED FOREIGN DOCUMENTS

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collection listed below. These collections contain ONLY foreign patents or nonpatent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

PLURAL PHYSICAL DISPLAY ELEMENT CONTROL SYSTEM (E.G., NON-CRT) (345/30)

- . Display elements arranged in matrix (e.g., rows and columns) (345/55)
- FOR 100 .. Cathodoluminescent type (345/74)
- FOR 101 ... Vacuum fluorescent (345/75)
- FOR 102 .. Memory (345/521)
- FOR 103 . Data manipulation (e.g., masking, interpolation) (345/523)
- FOR 104 .. Logical operation (345/524)
- FOR 105 .. Bit block transfer (345/525)
- FOR 106 . Data transfer between graphic system components (345/526)
- FOR 107 **DISPLAY STORAGE DEVICE (345/507)**
- FOR 108 . Color memory (345/186)
- FOR 109 .. Multiple planes (345/510)
- FOR 110 ... Addressing with priority (345/188)
- FOR 111 . Bit map or graphic memory (345/509)
- FOR 112 .. Addressing (345/515)
- FOR 113 .. Mask data operation (345/191)
- FOR 114 . Character memory (345/192)
- FOR 115 .. Addressing (345/193)
- FOR 116 .. Character generator (345/194)
- FOR 117 ... Multiple fonts (345/195)
- FOR 118 . Row buffer (e.g., line memory) (345/196)
- FOR 119 . Register (345/513)
- FOR 120 .. Shift register (345/197)
- FOR 121 ... With routing logic (345/198)
- FOR 122 . Color look-up-table (e.g., palette) (345/199)
- FOR 123 . Addressing circuitry (345/516)
- FOR 124 .. Memory addresses arranged in matrix (e.g., row and column addresses) (345/517)
- FOR 125 . Plural storage devices (345/508)
- FOR 126 .. Data transfer between memories (345/511)

FOR 127 . Shared memory (345/512)
FOR 128 . Condition code, flag, or status (345/514)
FOR 129 . Multiple port access (345/518)
FOR 130 . Data compression or compaction (345/202)
FOR 131 . Significant data assignment in storage device
(345/203)
FOR 132 **PLURAL DISPLAY SYSTEMS (345/1)**
FOR 133 . Remotely located (345/2)
FOR 134 . Diverse systems (e.g., CRT/LCD interface)
(345/3)
FOR 135 **DISPLAY ATTRIBUTE CONTROLLER (345/112)**
FOR 136 . Particular overlay (e.g., superimposing feature)
(345/113)
FOR 137 .. Foreground and background (345/114)
FOR 138 . Simultaneous diverse images (345/115)
FOR 139 .. Character and graphical display (345/116)
FOR 140 . Specified image of abnormal condition (345/117)
FOR 141 . Having image confined to designated region
(e.g., image clipping) (345/118)
FOR 142 . Image movement or position control (e.g.,
panning) (345/121)
FOR 143 .. Scrolling (345/123)
FOR 144 ... Alphanumeric (345/124)
FOR 145 ... Graphical (345/125)
FOR 146 .. Rotation (345/126)
FOR 147 . Image size control (345/127)
FOR 148 .. Alphanumeric (345/128)
FOR 149 ... Reduction (345/129)
FOR 150 ... Enlargement (345/130)
FOR 151 .. Graphical (345/131)
FOR 152 . Defined resolution (e.g., EGA, VGA) (345/132)
FOR 153 . Graphic display (345/133)
FOR 154 .. Waveform display (e.g., oscilloscope type)
(345/134)
FOR 155 .. Vector display (345/135)
FOR 156 .. With image smoothing control (e.g., anti-
aliasing) (345/136)
FOR 157 ... Convolution technique (345/137)
FOR 158 .. Averaging technique (345/138)
FOR 159 .. Perspective (345/139)
FOR 160 .. Bar graph (345/140)
FOR 161 . Character display (345/141)
FOR 162 .. Calligraphic (345/142)
COMPUTER GRAPHICS PROCESSING (345/418)
FOR 163 .. Character generating (345/467)
FOR 164 **CURSOR MANIPULATION (345/145)**
FOR 165 . Menu selection (345/146)
DISPLAY ATTRIBUTE CONTROLLER (345/112)
FOR 166 . Intensity control (e.g., gray scale) (345/147)

- FOR 167 . . Temporal processing (e.g., pulse width variation over time) (345/148)
- FOR 168 . . Spatial processing (e.g., patterns or subpixel configurations) (345/149)
- FOR 169 . Selectable color attributes (345/150)
- FOR 170 . . Including optical means (345/151)
- FOR 171 . . Designated subpixel arrangement (345/152)
- FOR 172 . . Color bit data modification or conversion (345/153)
- FOR 173 . . . Format change (e.g., NTSC to RGB, RGB to composite, or XYZ to RGB) (345/154)
- FOR 174 . . . Change in number of bits for a designated color (e.g., 4 bits to 8 bits, 8 bits to 4 bits) (345/155)

COMPUTER GRAPHICS PROCESSING (345/418)

- FOR 175 . Synchronization of diverse media (345/302)
- FOR 176 **OPERATOR INTERFACE (345/326)**
- FOR 177 . Interaction in a television environment (345/327)
- FOR 178 . . For video segment editing or sequencing (345/328)
- FOR 179 . For plural users or sites (345/329)
- FOR 180 . . Computer conferencing (345/330)
- FOR 181 . . Computer supported cooperative work (345/331)
- FOR 182 . . . Group window (345/332)
- FOR 183 . Interface customization or edition (345/333)
- FOR 184 . . Graphical appearance (345/334)
- FOR 185 . . Link between object and task or function (e.g., client/server) (345/335)
- FOR 186 . Having on-line help (345/336)
- FOR 187 . . Adaptive to user skill level (345/337)
- FOR 188 . . Context sensitive (345/338)
- FOR 189 . On-screen workspace or object (345/339)
- FOR 190 . . Window (345/340)
- FOR 191 . . . Window scrolled to needed portion (345/341)
- FOR 192 . . . Layout modification (e.g., move or resize) (345/342)
- FOR 193 . . . Window differentiation (345/343)
- FOR 194 Priority (345/344)
- FOR 195 Viewing lower priority window (345/345)
- FOR 196 . . . Interwindow link or communication (345/346)
- FOR 197 . . Pop-up control (e.g., message or dialog box) (345/347)
- FOR 198 . . Icon (345/348)
- FOR 199 . . . Metaphoric icon object (345/349)
- FOR 200 Indexed book or notebook (345/350)
- FOR 201 Office layout (e.g., filing cabinet, desk) (345/351)
- FOR 202 . . Menu (345/352)
- FOR 203 . . . Sub-menu structure (345/353)
- FOR 204 . . . Using button array (345/354)
- FOR 205 . . Interface represented by 3D space (345/355)

FOR 206 .. Hierarchy or network structure (345/356)
FOR 207 ... Navigation within structure (345/357)
FOR 208 . Gestured-based (345/358)

COMPUTER GRAPHICS PROCESSING (345/418)

. Three-dimension (345/419)
FOR 209 .. Mapping image onto surface of 3D object
(345/425)
FOR 210 . Surface detail/characteristic (345/429)
FOR 211 .. Texture (345/430)
FOR 212 .. Color (345/431)
FOR 213 .. Intensity (345/432)
FOR 214 . Object processing (345/433)
FOR 215 .. Clipping (345/434)
FOR 216 .. Merge/overlay (345/435)
FOR 217 .. Affine (345/436)
FOR 218 .. Rotation (345/437)
FOR 219 .. Translation (345/438)
FOR 220 .. Sealing (345/439)